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SECTION ONE

POSITIVISM, IDEALISM, AND PRAGMATISM

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I

POSITIVIST THOUGHT IN THE NINETEENTH CENTURY

ROM HARRÉ

INTRODUCTION

The positivist impulse, to accept only what is certain and to reject anything in any degree speculative, from its earliest intimations in classical Greece to its most recent revival in contemporary anti-realist philosophy of science, expresses itself in two main ways. It appears as a doctrine about the limits of what human beings can legitimately claim to know, displayed as an austere epistemological attitude. This leads to a foundationalism according to which only what is immediately given by the senses can be known for certain. It also appears as a doctrine about what can legitimately be taken to exist, displayed as an austere ontological attitude. This leads to a scepticism about the existence of unobservables of all sorts, from God to the material substance thought by many philosophers and scientists to account for common experience. Positivism is at root driven by an impulse, attitude, or frame of mind, which expresses itself in a variety of philosophical theses and arguments. That positivistic arguments and analyses are found convincing has perhaps more to do with an attitude of austerity and scepticism, than with their intrinsic worth. Always ready to wield Ockham's Razor against the proliferation of kinds of entities which people are tempted to believe in, positivists could be said to hold that it is better to accept less than one perhaps could, for fear of believing more than perhaps one should.

The topic of this chapter, the rise of positivism in the nineteenth century, picks out just one of the high points of a repeated cycle of waxing and waning enthusiasm for positivist austerity. Harsher and more relaxed attitudes to what one should reasonably believe have come and gone since antiquity. In the sixteenth century the debates about astronomy turned on an opposition between positivism and realism in science. Should one believe in the reality of the heliocentric theory or was it just a convenient calculating device for predicting the comings and goings of 'lights in the sky'? Considerations rather like those canvassed in the contemporary controversies in philosophy of science were

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advanced by the protagonists of each position, such as the positivist Osiander and the realist Kepler. In the eighteenth century the positivist impulse led some authors, especially Berkeley, to a kind of idealism, at least with respect to our knowledge of the material world. Only that which was perceptible should be held to exist. But in the nineteenth century positivism stood in opposition to idealism, yet in paradoxical ways. Its most powerful and influential nineteenth-century advocate, Ernst Mach, seemed to share a great deal with Berkeley. Both thought that the human senses provided not only the only proper grounding for claims about material reality, but also exhausted the realm of the real. Berkeley's hypothesis of a spiritual, that is, non-material, power to account for what people experience, might have been anathema to Mach, but was revived by another influential nineteenth-century adherent to the positivist attitude, Herbert Spencer.

For expository purposes one can divide the dramatis personae of the philosophical advocacy of positivism into three national groups. In Germany a form of positivism developed among physical scientists, consciously in opposition to the prevailing idealism of German philosophy. To some extent these overtly academic debates reflected important disputes about the hegemony of disciplines in the German universities. The positivist philosophers, such as Mach, were professional scientists. For them such Hegelian definitions as 'This *vanishing* and *self-generation* of space in time and time in space, a process in which time posits itself spatially as *place*, but in which place too, as indifferent spatiality, is immediately posited as temporal: this is *Motion*' (Hegel 1830 [1970]: 41) were not far short of insulting. In France the positivists were part of the anti-clerical movement which was expressed in the revolution of the late eighteenth century. Auguste Comte formulated positivism in the context of a history of the emancipation of the intellect from the superstition and myth he found in the institutionalised religion of his time. The scientific roots of French positivism were in the human sciences. In England the authors who advocated and defended something like positivism were united only by their positions in certain methodological controversies in the philosophy of science. William Whewell's Kantian defence of the priority of concepts over facts was famously disputed by J. S. Mill in a defence of a strong empiricism which had affinities to Comtian thought, and seemed to anticipate much that was argued for by the German physicists of the last half of the century. But there was no political commonality among English positivists. Mill was a man of the left, while Pearson held views that in our times would have been thought close to fascism.

In the nineteenth century the positivist attitude appeared first in France (Comte's *Cours de Philosophie Positive* began to be published in 1830), then in England (Mill's *A System of Logic* appeared in 1843) and finally in Germany

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(Mach's *Science of Mechanics* appeared in 1883). Not surprisingly it was the writings of Mach that, in hindsight, can be seen as having the most influence in the twentieth century.

POSITIVISM IN FRANCE: REINVENTING MORALITY IN A SECULAR WORLD

While there is no doubt that French positivism grew out of the critical philosophies and anti-clerical sentiments of the eighteenth century (Comte himself professed Saint Simon as his mentor), as Charlton (1959) points out in his comprehensive study of French thought in the middle of the century, those we might lump together as positivists, in their reliance on the senses as the exclusive sources of knowledge, held rather diverse views on how moral and political principles were to be created to replace those which their criticisms of religion would have eliminated. Yet, unlike the arrogant 'puritanical' reductionism of Ernst Mach, most acknowledged the existence of irresolvable mysteries, *inconnaissables*, and all recognised the difficulties of constructing a plausible and satisfying positivist ethics.

Auguste Comte (1798–1857), very much in the manner of his times, built his philosophy on the idea of a three-phase development of ways of understanding. Rather than describe these phases or styles as stages, he prefers to call them states or attitudes of mind, since he saw around him examples of people thinking in all three of the main ways he discusses. In the 'theological state of mind' a person looks for explanations in terms of the 'continuous and arbitrary actions of supernatural agents' (Comte 1830–42 [1864]: 5). The next, more advanced, state of mind is only a modification of the first, replacing supernatural agents by 'abstract forces . . . capable of giving rise by themselves to all the phenomena observed' (p. 5). In the third or positive state the human mind 'endeavours now to discover by a well-combined use of reasoning and observation, the actual *laws* of phenomena . . . that is to say, their invariable relations of succession and likeness'.

In a striking passage (Comte 1830–42 [1864]: I, 23) Comte slips from a repudiation of the search for first or final causes to a rejection of an interest in causes at all: 'we do not pretend to explain the real causes of phenomena, as this would merely throw the difficulty further back' (p. 23). All that Newton's Law of Gravity can do is to show us a great variety of phenomena as 'only a single fact looked at from different points of view . . . the weight of a body at the earth's surface' (p. 26). So stringent was Comte's empiricism that he famously and unwisely chose the chemical composition of the stars as a prime example of unattainable knowledge.

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A historian would see much of Hume in Comte's writings on the positive philosophy when applied to the natural sciences. But on psychology Comte was quite opposed to the Humean project of psychology as the study of the relations of ideas. He denied that we 'can discover the fundamental laws of the human mind, by contemplating it in itself'. The way forward was the 'physiological study of our intellectual organs'. French positivism was fiercely materialist. Not only were explanations to be reduced to laws of correlation of phenomena, but the phenomena too were exclusively material.

The laws of society ought to be discoverable by exactly the same methods as those by which the laws of material nature had been arrived at. It should be possible to devise a scientific sociology. By the four methods of Observation, Experiment, Comparison, and History we could arrive at laws of society without positing any unobservable causes. But these too will only be available to those whose 'state of mind' has passed from the theological through the metaphysical to the positive, seeking only correlations among social phenomena. Since not everyone can aspire to this degree of perfection Comte advocated the fabrication of a suitable religion to take the place of superstitious faiths of the time. But how was this to engender a morality? As Charlton (1959: 49) puts it: how can one be a positivist and yet provide an 'objective, authoritative ethical system'? If we are confined to phenomena how can we make the passage to such a system? From whence comes an 'ought' from a world of 'is'? Progress, according to the threefold scheme of 'states of mind', must pass from the theological to the positive, and this will of itself engender the new social morality. In the positive state of mind the true decency and generosity of human nature will come to dominate social relations. This is the 'law of progress'. Sociology is like a medicine for the ills of the state, letting natural health shine through. Since the main bar to progress is the persistence of primitive attitudes of mind, the cure is at hand – change the attitudes. But Comte certainly respected the role that religion had had in supporting morality, and he published a catechism for those who would 'take instruction' in the new religion (Comte 1852).

The next generation of positivistically oriented philosophers in France is typified by Hippolyte Taine (1828–93). In his own time Taine was famous, perhaps one could say notorious, for his attack upon the characters and the motives of the main figures of the French Revolution. His philosophical writings were also uncompromisingly critical of received opinion, in particular on those aspects of human life where spiritual or non-material entities and processes had been given a central role. Along with his criticisms of the revolutionaries went a reductionist treatment of moral qualities. In his *D'Intelligence* (1870) he set out an account of those aspects of human life that had been assigned to a mental substance, especially by Descartes, wholly in terms of the contents of conscious

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experience. He declared that both the 'self' (*le moi*) and material 'substance' were illusions. 'There is nothing of reality in the self but a stream of events' (quoted in Charlton 1959: 137). His metaphysical austerity is very much in the Comtian style. 'All reality', he declared, 'is perceived experientially by man'.

But his critical account of Mill's philosophy, *Le positivisme Anglais* (Taine 1864), shows how much his positivism differed from the strictly empiricist 'archetype', according to which natural regularities might have been otherwise, and hence their expression in empirical generalisations must be contingent. Causality was not a natural necessity, but merely a psychological product of the constant experience of experiential regularities. However, according to Taine, laws of nature and of psychology were indeed discovered by abstraction from catalogues of facts, but they were necessary causal truths. This allies him with the 'Kantians' like Whewell and Helmholtz, both of whom played important parts in the English and German versions of positivism.

In applying his positivist psychology, Taine was especially critical of the idea that works of art were the product of a special faculty, an individual spiritual teleology, and in his *Philosophie de l'art* (1865) he offered a systematic account of artistic excellence in the same manner as he had earlier dealt with other intellectual, mental, and moral qualities of human beings. The circumstances, not the artist, were responsible for the production of works of art. In the first place a work of art was an imitation of its model, but not too much. To understand a work of art 'it is necessary that it represents exactly the general spirit and customs (*moeurs*) of the time at which it appears' (Taine 1865: 7). He remarks that these constitute the primitive cause that determines all the rest. But there are secondary conditions, and these amount to the existence of a cultivated public who can recognise the work as according with the spirit of the times. Furthermore a work of art expressing a certain emotion will affect only those who have already experienced such an emotion. Culture is like the geographical conditions that determine what sorts of plants will grow in a certain place and time. This account is worth a fairly detailed exposition since it brings out another strand in positivist thought, the tendency to look for the sources of psychological phenomena in the environment rather than in the workings of an individual mind.

In summary, we can see that French positivism was anti-theoretical, strongly empiricist in the sense that the only legitimate source of knowledge was human sensory experience. However, the writings of Comte and Taine illustrate the extent to which French philosophers of the period were well aware that the sensationalism and environmentalism that they favoured in psychology left questions of great moment still unanswered. Above all they pondered the question 'How to live?'

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POSITIVISM IN ENGLAND: WHAT IS SCIENTIFIC KNOWLEDGE?

The positivist quest for a firm basis for knowledge led back always to what could be discerned by the use of the five senses. Yet data derived in this fundamental way were local and particular. The known laws of nature and the anticipated laws of human thought and social action were evidently universal and general in scope. How could the one be related to the other? Two answers had been proposed in the late eighteenth century. According to Hume the generalisation of patterns of concomitance in experience were at best guides to practical action, but, from the limited evidence available, they could not be certified as necessary truths. According to Kant the basic laws of nature were synthetic a priori propositions expressing the forms within which human experience had to be framed. Comte took the Humean stance while Taine's views were Kantian. The same opposition characterised English philosophy of science in the nineteenth century.

John Stuart Mill (1806–73) published his *System of Logic* in 1843. Its influence was immediate and long lasting. It became a standard textbook in the universities and was generally taken to be a definitive account of scientific method for the rest of the century. In Book III Mill presented a set of principles by the use of which reliable knowledge of material causes could be arrived at. Mill's philosophical outlook owed a great deal to his youthful enthusiasm for the ideas of Saint Simon and, from these, to the writings of Comte. The principles upon which Mill proposed to found an Inductive Logic, to set alongside Deductive Logic as a method of proof for the empirical sciences, are the famous Canons of Induction. Clearly influenced by Bacon's *Novum Organon* (1620), Mill based his system on the distinction between ephemeral and permanent causes (Mill 1843 [1862: 258]). Finding a regular concomitance between paired types of events gives us a hint that the one might be the cause or part of the cause of the other. This hint is confirmed, usually by deliberate experiment, if it is found that in the absence of the putative cause no event of the correlated type occurs. For permanent causes like gravity one must look to see if variations in the one are correlated (or anti-correlated) with variations in the other. Mill describes his Canons as 'the only possible modes of experimental enquiry – of direct induction *a posteriori*, as distinguished from deduction' (Mill 1843 [1862: 266]). Not only were the laws of physics and chemistry arrived at by induction, but so were the laws of arithmetic and geometry. The laws of logic were the laws of thought. This was a thoroughgoing empiricism. To the objection that all this was based on data that were local in both space and time Mill answered that the Uniformity of Nature upon which the formal validity of his 'inductions'

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depended was itself a 'complex fact' arrived at by the same methods (Mill 1843 [1862: 206]), an application of the 'boot-strap principle'.

The dominant figure in British philosophy of science at the time Mill published his *System of Logic* was William Whewell, Master of Trinity College, Cambridge, friend and mentor of Michael Faraday, and of whom it was said 'his foible was omniscience'. Whewell had argued, with a multitude of examples, that facts could only be discovered by the application of prior hypotheses to inchoate experience. Such hypotheses were initially relative to their immediate applications, but refined as a kind of dialectic between ideas and facts unfolded through the pursuit of experimental programmes, driven by the newly revised ideas (Whewell 1847: I, 42). Hence, Whewell declared, Mill's four methods or canons were not and need not be employed in the process of discovery.

Mill, granting that his four methods might not be methods of discovery, insisted that they were the indispensable methods of proof. For Whewell new facts brought forth new hypotheses leading to a gradual refinement of hypotheses. For Mill something like proof was called for. According to Mill it is modes of thought that produce errors. 'Hence it is that, while the thoughts of mankind have on many subjects worked themselves practically right, the thinking power remains as weak as ever . . . in what relates to the invisible world . . . and to the planetary regions, men of the greatest scientific achievement argue as pitiably as the merest ignoramus' (Mill 1843 [1862: 285]). Of course what they need is Mill's Canons, a strict method of proof. 'The business of Inductive Logic is to provide rules and models . . . to which, if inductive arguments conform, those arguments are conclusive, and not otherwise' (Mill 1843 [1862: 283]).

It seems that Mill was not seriously troubled by the problem that had been much in the minds of the French philosophers of the positivist frame of mind: namely, how is it that from a basis of the sensations of individual human beings, we, those human beings collectively, arrive at a common material world, a commonality obvious in even the simplest activities that we engage in, individually and collectively? The methods Mill advocated were not techniques for bridging the gap between sensation and reality, but for bridging the gap between local and general facts about that common world.

Despite the success of Mill's point of view with many scientists, and the popularity of a strict empiricism with chemists, many of whom rejected the reality of chemical atoms, the necessity for some a priori principles in science was still felt by some positivists, in particular Karl Pearson (1857–1936). Pearson virtually created the modern mathematical science of statistics. His enthusiasm for it led him into both philosophy of science and politics. In the latter he became the academic leader of the eugenics movement. From his eponymous Galtonian chair in the University of London he advocated the state control of human

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breeding. In philosophy of science his rejection of the idea of any real uniformities behind observable variations led him to a kind of positivism. The idea of natural homogeneities is a metaphysical conceit. Pearsonian statistical curves were mental constructs summing up the data and no uniform underlying causes could be inferred from them. His book, *The Grammar of Science* (Pearson 1892), coming decades after Mill's empiricism, served to boost the positivistic point of view against the rising tide of British idealism. Since all we have are simple sensory experiences, how could the complex material world, as we perceive it and as the natural sciences seem to reveal it, be possible objects of a common discourse? Here again is the same problem that troubled the French positivists. Pearson resorted to a Kantian solution.

> such an [external] object [for example a blackboard] must be recognised as largely constructed by ourselves; we add to a greater or lesser store of immediate sense-impressions an associated group of stored sense-impressions. (Pearson 1892: 41)

> But the things-in-themselves which the sense-impressions symbolise, the 'reality' as the metaphysicians wish to call it, at the other end of the [sensory] nerve, remain unknown and unknowable. (Pearson 1892: 63)

> The fact that the human reflective faculty is able to express in mental formulas the routine of perceptions may be due to this routine being a product of the perceptive faculty itself. (Pearson 1892: 112)

Indeed Pearson's views were described by Peirce (1892) as 'Kantian nominalism'. The laws of nature were not just generalisations or abstractions from catalogues of simple experiential facts. They were 'products of the perceptive faculty'. 'The logic man finds in the universe', said Pearson, 'is nothing but the reflection of his own reasoning faculty.' There is no knowable reality (in both senses of 'know', *savoir* and *connaître*) other than the sensations of the individual consciousness. The motivation for science as the abstraction of statistical regularities is 'economy of thought'. There was a shared common world only because each mind was furnished with the same a priori principles.

The influence of Hume can surely be discerned in Pearson's remark that 'what I term "myself" is only a small subdivision of the vast world of sense-impressions' (Pearson 1892: 66). Significantly Pearson reproduced Mach's famous drawing of his own field of vision, looking down his lounging body to his feet. It is not surprising that Pearson remarked that matter, force, and action at a distance 'do not express real problems of the phenomenal world'.

POSITIVISM IN GERMANY: PHYSICISTS AS PHILOSOPHERS

In the German story we have a grand opposition between claims to knowledge based on scientific research, positive science, and what were seen as not much

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